# Course Specification

<table>
<thead>
<tr>
<th>Institution</th>
<th>University of Tabuk</th>
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<tbody>
<tr>
<td>College/Department</td>
<td>Faculty of Applied Medical Sciences, Department of Physiotherapy</td>
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</table>

## A Course Identification and General Information

1. **Course title and code**: Physiology PHT 232

2. **Credit hours**: 2 credit H/week (theoretical) and 1 credit H/week (practical)

3. **Program(s) in which the course is offered**.
   (If general elective available in many programs indicate this rather than list programs)
   (Bachelor of Physiotherapy)

4. **Name of faculty member responsible for the course**: Bassem Alsawy

5. **Level/year at which this course is offered**
   Level 3

6. **Pre-requisites for this course (if any)**
   Non Applicable

7. **Co-requisites for this course (if any)**
   Anatomy and Biochemistry courses

8. **Location if not on main campus**
   Main camps for theoretical part and Faculty of Medicine for the practical part
B. Objectives

1. Summary of the main learning outcomes for students enrolled in the course.

A first level course of physiotherapy programs in the faculty of applied medical sciences. It is used as a general skills course and as a service course for a number of programs that should be taken for all medical students.

To inform students of the basic facts on which their knowledge can be built.

To promote the capacity for self-education.

To encourage individual creativity, critical thought and evaluation of experimental evidence.

The student at the end of this course should be able to:

- Identify structure and function of the cell
- Explain the regulations of body function
- Familiar with the physiological function of the following body systems:
  cardiovascular system, respiratory, nervous, muscular, genitourinary, gastrointestinal & endocrinal systems.

The aims of this course are to enable students to:

1. acquire an appropriate functional background of cells, tissues, organs & systems.
2. integrate physiological data & mechanisms with the ongoing basic sciences: anatomy, histology & biochemistry and clinical applications.
3. follow the rapidly changing and inflating details about molecular biology & genetics.
4. explore in detail the functions of the autonomic, the neuromuscular, the respiratory and the cardiovascular systems as well as their integration to achieve homeostasis.
5. develop the basic scientific research skills as well as effective communication and team work attitudes.
6. explore in details the functions of the endocrinal, the reproductive the nervous, the renal & the digestive systems as well as their integration to achieve homeostasis.
7. integrate physiological data & mechanisms with the ongoing basic sciences: anatomy, histology & biochemistry and their clinical applications.
8. follow the rapidly changing and inflating details about molecular physiology & genetics.
9. develop the basic skills and ethical behavior required for scientific research, as well as effective communication and team work attitude.
10. developed scientific research skills and effective communication and team work attitudes.

2. Briefly describe any plans for developing and improving the course that are being implemented. (eg increased use of IT or web based reference material, changes in content as a result of new research in the field)

- An online computer software (named Compass®) has been developed and is just started working. It will help us map and align our curriculum as a whole, including all courses/modules.
- A similar online software (named Exambank®) has also been developed and is now under trial. It will help us build our own bank of exam items for upgrading the student assessment system all through the school years.
- Continuous updating and reform of the study guide (syllabus) of the module is done on regular basis. This gives a dynamic nature for the course and keeps it updated.

C. Course Description (Note: General description in the form to be used for the Bulletin or Handbook should be attached)

<table>
<thead>
<tr>
<th>1 Topics to be Covered</th>
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<tbody>
<tr>
<td>List of Topics</td>
</tr>
<tr>
<td>Introduction and Autonomic Nervous System</td>
</tr>
<tr>
<td>Component</td>
</tr>
<tr>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Excitable Tissues (the nerve)</td>
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<tr>
<td>Excitable Tissues (the Muscle)</td>
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<tr>
<td>Blood</td>
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<tr>
<td>Respiration</td>
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<tr>
<td>Circulation</td>
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<tr>
<td>Gastrointestinal system</td>
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<tr>
<td>Renal system</td>
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<tr>
<td>Endocrine system</td>
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<td>Reproductive system</td>
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2 Course components (total contact hours per semester):

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Tutorial</th>
<th>Laboratory</th>
<th>Practical/Field work/Internship</th>
<th>Other</th>
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<tr>
<td>32</td>
<td>32</td>
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3. Additional private study/learning hours expected for students per week. (This should be an average: for the semester not a specific requirement in each week)

- “Students’ activities” elective, as student self directed learning.
4. Development of Learning Outcomes in Domains of Learning

For each of the domains of learning shown below indicate:

- A brief summary of the knowledge or skill the course is intended to develop;
- A description of the teaching strategies to be used in the course to develop that knowledge or skill;
- The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned.

a. Knowledge

(i) Description of the knowledge to be acquired

- This course covers the basic knowledge of the normal functioning of the body with particular reference to basic body homeostasis.
- This course aims to provide an understanding of essential concepts in physiology:
  - The importance of homeostasis, various ways by which cells communicate, ways of monitoring of both the internal and the external environment;
  - These concepts will be applied to explain functioning of specific tissues.
- For students to obtain an increase in their knowledge of autonomic physiology (involuntary functions of the body).
- Describe the structure and functions of the Autonomic nervous system, its higher centers, autonomic receptors and chemical transmitters.
- The course begins by considering the physiology of essential components of the motor system; muscles and the motor unit
- The existence of resting membrane potential
  - Initiation and propagation of action potential
- Mention the properties of excitability of living tissues, membrane potentials, and their relation to different phases of excitability, physiological anatomy of the skeletal muscle and mechanism of contraction and changes occurring during it.
- The course begins by considering the physiology of essential components of the blood, blood functions and all defensive mechanisms of the body against any invading organisms
- Mention the general components of blood and its functions, mechanism of blood coagulation and regulation of blood volume and understand some of clinical conditions occurring due to deficiency of one or more of the blood components.
- The course builds upon your primary knowledge of the heart and circulation. Essential aspects of cardiac and vascular physiology will be considered. This will enable you to grasp a number of areas of experimental, applied and patho-physiology.
- The course begins with a review of some basic concepts relevant to the understanding of
respiratory physiology. We will then build on these basic concepts to introduce and explain how breathing is monitored and controlled in a range of physiological and pathophysiological situations. Although the emphasis is on respiration in health and disease in humans, we will draw on evidence obtained in animal experimentation to illustrate the underlying mechanisms involved in ventilatory control. Throughout, there will be emphasis on the methodology used in particular studies and their limitations.

- his is responsible for changing the food into substances that can be recognized and used by the cells of the body.

- Explain the general mechanism of the gastrointestinal secretion, components of functions of different parts of the digestive system the mechanism of absorption, types of gastrointestinal movements and some clinical conditions, which result from disturbances of functions.

- This is the glandular system. It uses chemical messengers called hormones to carry instructions around the body. The health of the body depends on a correct hormonal balance.

- Reproduction System Responsible for continuation of the species.

- All chemical changes occurring inside the body.

(ii) Teaching strategies to be used to develop that knowledge

- Interactive lectures.

- Practical Lectures.

(iii) Methods of assessment of knowledge acquired

- Multiple-Choice Questions (MCQ) paper-and-pencil tests.

- Quizzes

b. Cognitive Skills

(i) Description of cognitive skills to be developed

- At the end of the course, students should be able to:

- describe the cellular functions at the organelle and molecular level.

- describe & explain the functions of the nerve cell the nerve and muscle fiber grossly and at the molecular level.

- describe some biophysical laws and their relation to physiology.
- to enable students to understand the principles and mechanisms of body function, so that they can appreciate how these alter in illness.

- Demonstrate understanding of different physiological functions of the body

- To support bioscience curricula in nursing.

- To convey a sense of fascination and enthusiasm about how the body works and motivate students to further their studies.

- perform hematological tests: estimation of blood Hb, bleeding & clotting times, determination of the hematocrite value, the bleeding & clotting times and blood group.

- perform the most important respiratory function tests.

- perform the measurement of the arterial blood pressure.

- manipulate a stethoscope for hearing heart and respiratory sounds.

- record and read an electrocardiogram.

- present physiological scientific data in a graphical form

- perform a systematic examination of the nervous system: types of sensations, motor system, tendons jerks and muscle tone.

- perform the most important visual tests: corneal, light accommodation reflexes, visual acuity, colour vision and visual field defects.

- perform a preliminary examination of common endocrinal conditions: acromegaly, dwarfism and a thyroid disease (hypo or hyper).

- In summarizing the cognitive skills:

  1: Systematically retrieve, select and integrate appropriate information from this science
  2: Synthesise and evaluate evidence, arguments and ideas from both primary and secondary sources in a self-directed manner
  3: Analyse and interpret quantitative information in graphs, figures, tables and equations and apply and analyse appropriate statistical tests
  4: Integrate and link appropriate information across course components, including material met in different disciplines
  5: Plan and conduct a substantial research project and present it in a coherent manner

(ii) Teaching strategies to be used to develop these cognitive skills

- Interactive lectures

- SDL

- Clinical case presentations
- Course work essays, the literature review, learning log and the research project.

(iii) Methods of assessment of students cognitive skills

- Multiple-Choice Questions (MCQ) paper-and-pencil tests.
- Modified Essay Questions (MEQ) paper-and-pencil tests.

c. Interpersonal Skills and Responsibility

(i) Description of the interpersonal skills and capacity to carry responsibility to be developed

- Display the personal attributes of compassion, honesty, and integrity in relationships with patients, families, communities and the medical profession.
- Exhibit appropriate value for the sensitive nature of the doctor/patient relationship and the importance of active listening, with attention to the patient’s familial, cultural, and spiritual circumstances.
- Demonstrate professionalism and high ethical standards in all aspects of medical practice, specifically competence, honesty, integrity, respect for others, professional responsibility and social responsibility.
- Exhibit a capacity for self-evaluation, moral reflection and ethical reasoning to form the basis for a self-directed, lifelong engagement in the responsible, committed, compassionate practice of medicine.
- Apply the four principles of ethical and legal knowledge, namely respect for autonomy, beneficience, non-maleficience and justice.
- Demonstrate awareness and understanding of the legal and professional responsibilities; and report inappropriate medical practice.
- Integrates multiple aspects of identity into a coherent whole; recognizes and exhibits interdependence in accordance with environmental, cultural, and personal values; identifies and commits to important aspects of self
- Works cooperatively with others, including people different from self and/or with different points of view; seeks and values the involvement of others; listens to and considers others’ points of view

(ii) Teaching strategies to be used to develop these skills and abilities

- SDL
- discussion in practical of appropriate responses and consequences to individuals involved.
Motivating the student, who searching for more details in our topics by some elective marks.

(iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility

- Lectures sessions evaluation forms
- practical exams

d. Communication, Information Technology and Numerical Skills

(i) Description of the skills to be developed in this domain.

- Work effectively as part of a health care team
- Communicate effectively with patients, their families and colleagues, both verbally and in writing
- Retrieve information by all means including electronically
- Present information clearly in written, electronic and oral forms
- Work within a changing, multi-task environment
- Create and sustain a therapeutic and ethically sound relationship with patients
- Use effective listening skills and elicit and provide information using effective nonverbal, explanatory, questioning and writing skills
- Effectively document practice activities
- Thus by the end of the course, students should be able to:
  - 1. identify the essential ethical issues involved in scientific research.
  - 2. work separately or in groups to research and prepare a scientific topic.
  - 3. use available presentation aids (e.g. Overhead Projectors or Data Show) to present clearly and effectively a scientific topic in a tutorial, a staff meeting or the yearly scientific day.

(ii) Teaching strategies to be used to develop these skills

- Using the recent thatching equipments in this course, as computer conferences and data show etc.
- Student assignments require good standards of use of ICT. Where standards are inadequate the student is referred for special remedial instruction. Student essay assignments require proper style and referencing format as specified in college style manual.
(iii) Methods of assessment of students numerical and communication skills

- Test questions require interpretation of simple statistical information. Assessments of students assignment and project work include expectation of adequate use of numerical and communication skills

e. Psychomotor Skills (if applicable)

(i) Description of the psychomotor skills to be developed and the level of performance required

- To perform and make a comment on some clinical parameters (ABP, ECG, ESR, Blood fragility test, normal heart rate, factors affecting it, nerve conduction and velocity, normal pulmonary function tests) in a normal individual.

- Perform hematological tests: estimation of blood Hemoglobin, bleeding and clotting times, blood groups and read the erythrocyte sedimentation rate.

- Perform the most important respiratory functions tests Perform the measurement the arterial blood pressure Use the stethoscope to hear the heart sounds and respiratory sounds

- Record and read the ECG.

- Dissect the frog and perform experiments of (simple muscle twitch, factors affecting it, properties of the cardiac muscle and factors affecting it).

- Perform a systematic examination of the nervous system: types of sensations, motor system, tendons jerks and muscle tone.

- Perform the most important visual tests: corneal, light & accommodation reflexes, visual acuity, colour vision and visual field defects.

- Perform a preliminary examination of common endocrinal conditions: acromegaly, dwarfism and a thyroid disease (hypo or hyper).

- Integrate physiology with other basic and clinical sciences.

(ii) Teaching strategies to be used to develop these skills

- By making continuous practical lab training for every student, until he become expert on doing all these skills.

(iii) Methods of assessment of students psychomotor skills

- Practical exams (OSPE)
5. Schedule of Assessment Tasks for Students During the Semester

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Assessment task (eg. essay, test, group project, examination etc.)</th>
<th>Week due</th>
<th>Proportion of Final Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Suggested time for a Quiz</td>
<td>4th week</td>
<td>5%</td>
</tr>
<tr>
<td>2</td>
<td>Midterm Practical Exam</td>
<td>9th week</td>
<td>10%</td>
</tr>
<tr>
<td>3</td>
<td>Midterm Written Exam</td>
<td>10th week</td>
<td>20%</td>
</tr>
<tr>
<td>4</td>
<td>Suggested time for a Quiz</td>
<td>14th week</td>
<td>5%</td>
</tr>
<tr>
<td>5</td>
<td>final Practical Exam</td>
<td>17th week</td>
<td>10%</td>
</tr>
<tr>
<td>6</td>
<td>Final Written Exam</td>
<td>19th week</td>
<td>50%</td>
</tr>
<tr>
<td>7</td>
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<tr>
<td>8</td>
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D. Student Support

1. Arrangements for availability of teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

All the teaching staff in all departments are available during their office hours for individual student consultations and academic advice.

E Learning Resources

1. Required Text(s)

   **Guyton, A. C. (2012).**

2. Essential References

     (Gerald G Tortora, Bryan H Derrickson/Kathleen Schmidt Prezbindowski)

3- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)


4-.Electronic Materials, Web Sites etc
  (Computer file includes 8 audi cassettes, video tutor and CD-ROM)

www.physiologyonline.com
www.Americanjournalofphysiology

5- Other learning material such as computer-based programs/CD, professional standards/regulations
  - Practical equipments (experimental tools.
  - instruments, computers, chemicals, models).

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (ie number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Lecture rooms, laboratories, etc.)
   - Lecture rooms (1 hour per theoretical lecture) and physiology lab (2 hours per practical lecture).

2. Computing resources
   - Internet access
   - Scanner
   - Printer
   - Projector
   - Smart board
   - Lab top

3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list)
   - Tools, chemicals, models.

G. Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching
   - End of course evaluation form (for evaluation of the teachers and also of the course). Data is collected and analysed, with recommendations to the school administration.
   - Students evaluation in each semester
   - Meeting with suggestions
   - Open door policy

2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department
3 Processes for Improvement of Teaching

- Staff development workshops. Issues of importance to the teaching function of the staff are addressed.
- Availability of the Medical Education Department for consultations related to the curriculum/assessment.
- Encouragement of faculty members to attend professional development conferences.
- Regular informal meetings between staff members for exchanging of teaching experiences.

4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

- Discussion of the students learning abilities with another professor in the same field
- A Student Assessment Committee was formed by the school administration to control the process of measuring students’ achievement on all levels. Subcommittees for OSPE and paper-and-pencil were also formed to monitor the quality of test items.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

- Course effectiveness is continuously monitored through reports about students’ achievement of course objectives. Reports are discussed in the Student Assessment Committee and Curriculum Committee in their biweekly meetings and actions are taken accordingly.
- Reports about students’ evaluation of course teachers, course content, and the teaching/learning process are also discussed in the Curriculum Committee and actions are taken accordingly.

Faculty or Teaching Staff: Dr. Muhammad Shakil Sadiq

Signature: ___________________ Date Report Completed: ___________________

Received by: Dr. Hamad Al Amer Dean/Department Head

Signature: ___________________ Date: _______________